DEFENSE INFORMATION SYSTEMS AGENCY
P. O. BOX 549
FORT MEADE, MARYLAND 20755-0549

IN REPLY
REFER TO: Joint Interoperability Test Command (JTE)

MEMORANDUM FOR DISTRIBUTION **6 Jul 11**

SUBJECT: Special Interoperability Test Certification of the Cisco Unity Connection with Software Release 8.0(2)

References: (a) DoD Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (d), see Enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Cisco Unity Connection with Software Release 8.0(2) is hereinafter referred to as the System Under Test (SUT). The SUT meets all of its critical interoperability requirements and is certified as interoperable for joint use within the Defense Information System Network (DISN) as a Customer Premise Equipment (CPE) voicemail system. The SUT met the critical interoperability requirements set forth in References (c) using test procedures derived from Reference (d). The SUT was tested with the Cisco Unified Communication Manager Release 8.0(2). Additionally, JITC analysis determined the SUT is also certified for joint use with the other versions of the Cisco Unified Communications Manager and Cisco Call Manager switching systems listed on the Unified Capabilities (UC) Approved Product List (APL). The SUT offers facsimile (fax) and e-mail capabilities; however, these capabilities were not tested and are not covered under this certification. No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that could affect interoperability, but no later than three years from the date the DISA Certification and Accreditation (CA) provided a positive Recommendation.

3. This finding is based on interoperability testing, review of the vendor's Letters of Compliance (LoC), DISA adjudication of open test discrepancy reports, and DISA CA Recommendation. Interoperability testing was conducted at JITC's Global Information Grid Network Test Facility, Fort Huachuca, Arizona from 17 through 21 January 2011. Review of the vendor's LOC was completed on 10 May 2011. DISA adjudication of outstanding test discrepancy reports was completed on 10 May 2011. The DISA CA provided a positive Recommendation on 16 June 2011 based on the security testing completed by DISA-led IA test teams and published in a separate report, Reference (e). Enclosure 2 documents the test results and describes the tested network and system configurations.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in Table 1. This interoperability test status is based on the SUT's ability to meet CPE voicemail system requirements specified in section 5 of Reference (c) verified through JITC testing and/or vendor submission of LoC.

Table 1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Functional Requirements	Met	UCR Paragraph
IP 1000BaseT (IEEE 802.3-2005)	Yes	Yes	Differentiated Service Code Point (R)	Partially Met[1]	5.3.3.3.2
			IEEE 802.3 (C)	Met	5.3.3.12.4.2
			DISR compliance as applicable (R)	Met	5.2.3.2
			FCC Part15/Part 68 (R)	Met	5.2.3.2
			ROUTINE precedence only in accordance with UCR, Section 5.2 (R)	Met	5.2.1.2
Security	Yes	Yes	Security (R)	See note 2.	3.2.3, 3.2.5

NOTES:
1 The SUT met the DSCP tagging requirements in accordance with UCR section 5.3.3.3.2 with the following exceptions: All Session Initiation Protocol (SIP) signaling packets from the Unity Connection Server were marked with a DSCP value of 24 decimal. The expected DSCP value is 40 Decimal. Additionally, the Unity Connection Server can not assign a DSCP value of 0-63 for signaling packets. DISA has adjudicated this discrepancy as having a minor operational impact.
2 Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

LEGEND:

1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	DSCP	Differentiated Services Code Point
802.3-2005	Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method	FCC	Federal Communications Commission
		IEEE	Institute of Electrical and Electronics Engineers
		IP	Internet Protocol
C	Conditional	Mbps	Megabits per second
DISA	Defense Information Systems Agency	R	Required
DISR	Department of Defense Information Technology Standards Registry	SUT	System Under Test
		UCR	Unified Capabilities Requirements

5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at http://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/tssi. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.

6. The JITC point of contact is Mr. Edward Mellon, DSN 879-5159, commercial (520) 538-5159, FAX DSN 879-4347, or e-mail to edward.mellon@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 1027202.

FOR THE COMMANDER:

2 Enclosures a/s

for BRADLEY A. CLARK
Chief
Battlespace Communications Portfolio

Distribution (electronic mail):
Joint Staff J-6
Joint Interoperability Test Command, Liaison, TE3/JT1
Office of Chief of Naval Operations, CNO N6F2
Headquarters U.S. Air Force, Office of Warfighting Integration & CIO, AF/XCIN (A6N)
Department of the Army, Office of the Secretary of the Army, DA-OSA CIO/G-6 ASA (ALT), SAIS-IOQ
U.S. Marine Corps MARCORSYSCOM, SIAT, MJI Division I
DOT&E, Net-Centric Systems and Naval Warfare
U.S. Coast Guard, CG-64
Defense Intelligence Agency
National Security Agency, DT
Defense Information Systems Agency, TEMC
Office of Assistant Secretary of Defense (NII)/DOD CIO
U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities Division, J68
Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

(d) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008 Change 1," 22 January 2010
(e) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
(f) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Cisco Unity Connection Release (Rel.) 8.0 (Tracking Number 1027202)," 21 June 2011

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Cisco Unity Connection with Software Release 8.0(2) is hereinafter referred to as the System Under Test (SUT).

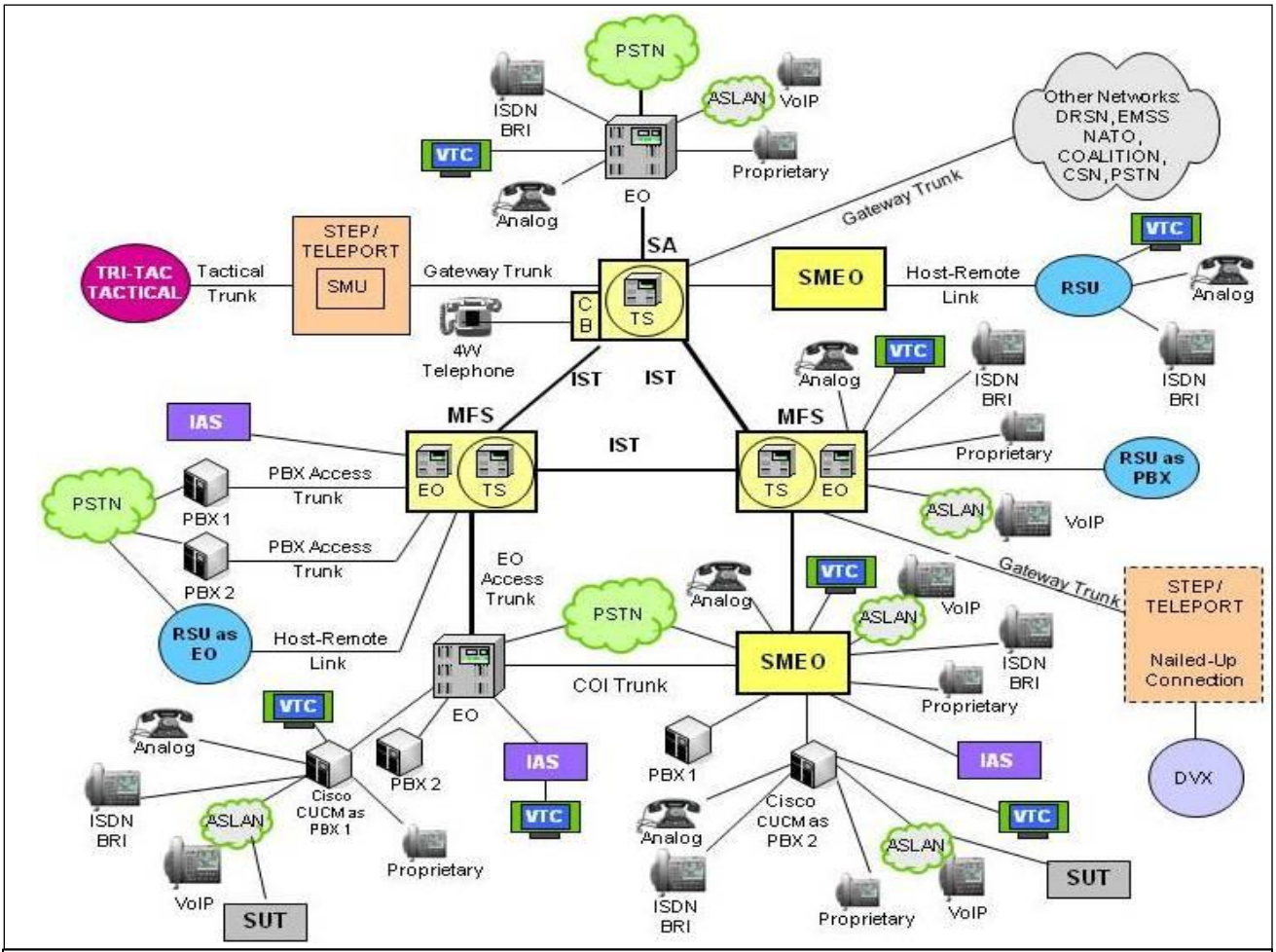
2. PROPONENT. Missile Defense Agency (MDA).

3. PROGRAM MANAGER. Mr. Stuart Strong, MDA/DXCA, 730 Irwin Avenue, Schriever Air Force Base, Colorado 80912, e-mail: stuart.strong@mda.mil.

4. TESTER. Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

5. SYSTEM UNDER TEST DESCRIPTION. The SUT is a Voice Messaging System that offers Unified Communications capabilities through integration with Microsoft Outlook and Cisco ViewMail to interface and provide Voice Message services to Certified Defense Information System Network (DISN) equipment. The SUT is capable of running concurrently on the same hardware as the Cisco Unified Communications Manager through the use of virtualization on supported hardware/software combinations. Survivability features differ from each model, they include server platforms including Redundant Array of Independent Disks (RAID) hard-drives which support hot-swapping of drives, dual power supplies, and Network Interface Card (NIC). The SUT utilizes a web-based interface to maintain the necessary information needed to provide messaging services to authorized mailbox owners as well as system maintenance. The information includes mailbox associations, system and messaging service settings, maintenance and diagnostics. The SUT offers facsimile (fax) and e-mail capabilities; however these capabilities were not tested and are not covered under this certification. Management of the SUT is though a site-provided, Secure Technical Implementation Guide (STIG)-compliant workstation. Although redundancy is not tested or required for Customer Premise Equipment (CPE), the SUT supports a two-server active/active cluster within a site (LAN) to provide high availability and redundancy.

6. OPERATIONAL ARCHITECTURE. The Unified Capabilities Requirements (UCR) DSN architecture in Figure 2-1 depicts the relationship of the SUT to the DSN switches.



LEGEND:

ASLAN	Assured Services Local Area Network
4W	4-Wire
BRI	Basic Rate Interface
CB	Channel Bank
COI	Community of Interest
CSN	Canadian Switch Network
CUCM	Cisco Unified Communications Manager
DRSN	Defense Red Switch Network
DSN	Defense Switched Network
DVX	Deployable Voice Exchange
EMSS	Enhanced Mobile Satellite System
EO	End Office
IAS	Integrated Access Switch
ISDN	Integrated Services Digital Network
IST	Interswitch Trunk
MFS	Multifunction Switch
NATO	North Atlantic Treaty Organization
PBX	Private Branch Exchange
PBX 1	Private Branch Exchange 1
PBX 2	Private Branch Exchange 2
PSTN	Public Switched Telephone Network
RSU	Remote Switching Unit
SMEO	Small End Office
SMU	Switched Multiplex Unit
STEP	Standardized Tactical Entry Point
TDM/P	Time Division Multiplex/Packetized
Tri-Tac	Tri-Service Tactical Communications Program
TS	Tandem Switch
VoIP	Voice over Internet Protocol
VTC	Video Teleconferencing

Figure 2-1. DSN Architecture

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in Table 2-1. These requirements are derived from the UCR Interface and Functional Requirements and were verified through JITC testing. The specific SUT applications certified on each interface are depicted in Table 2-1.

Table 2-1. SUT Functional Requirements and Interoperability Status

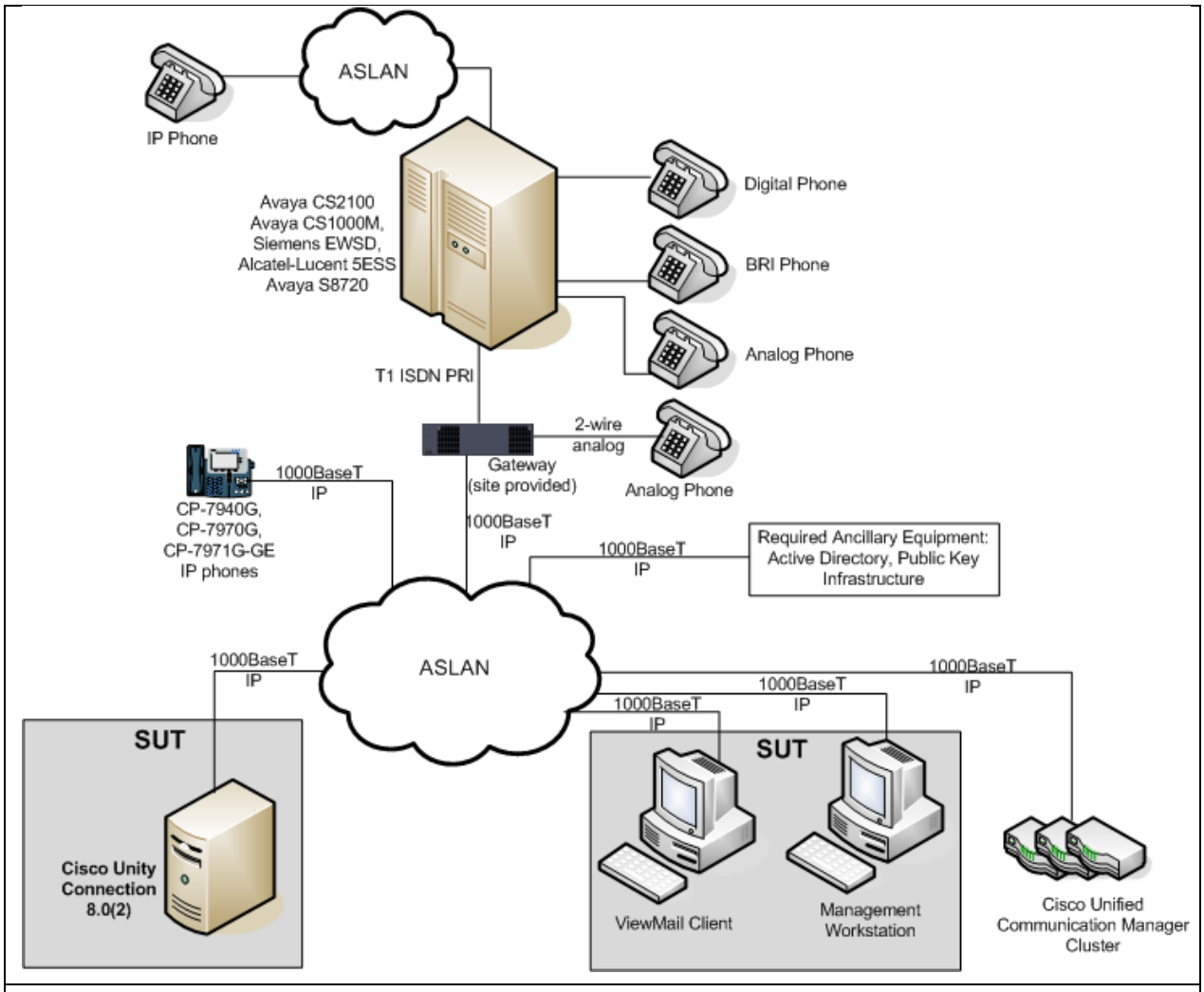
Interface	Critical	Certified	Functional Requirements	Met	UCR Paragraph
IP 1000BaseT (IEEE 802.3-2005)	Yes	Yes	Differentiated Service Code Point (R)	Partially Met[1]	5.3.3.3.2
			IEEE 802.3 (C)	Met	5.3.3.12.4.2
			DISR compliance as applicable (R)	Met	5.2.3.2
			FCC Part15/Part 68 (R)	Met	5.2.3.2
			ROUTINE precedence only in accordance with UCR, Section 5.2 (R)	Met	5.2.1.2
Security	Yes	Yes	Security (R)	See note 2.	3.2.3, 3.2.5

NOTES:
1 The SUT met the DSCP tagging requirements in accordance with UCR section 5.3.3.3.2 with the following exceptions: All Session Initiation Protocol (SIP) signaling packets from the Unity Connection Server were marked with a DSCP value of 24 decimal. The expected DSCP value is 40 Decimal. Additionally, the Unity Connection Server can not assign a DSCP value of 0-63 for signaling packets. DISA has adjudicated this discrepancy as having a minor operational impact.
2 Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (e).

LEGEND:

1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	DSCP	Differentiated Services Code Point
802.3-2005	Local Area Network/metropolitan Area Network Carrier Sense Multiple Access/Collision Detection Access Method	FCC	Federal Communications Commission
		IEEE	Institute of Electrical and Electronics Engineers
		IP	Internet Protocol
		Mbps	Megabits per second
C	Conditional	R	Required
DISA	Defense Information Systems Agency	SUT	System Under Test
DISR	Department of Defense Information Technology Standards Registry	UCR	Unified Capabilities Requirements

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Global Information Grid Network Test Facility in a manner and configuration similar to that of the DSN operational environment. Testing the system's required functions and features was conducted using the test configurations depicted in Figure 2-2.



LEGEND:

5ESS	Class 5 Electronic Switching System	ISDN	Integrated Services Digital Network
ASLAN	Assured Services Local Area Network	Mbps	Megabits per second
BRI	Basic Rate Interface	PC	Personal Computer
CS	Communication Server	PRI	Primary Rate Interface
EWSD	Elektronisches Wählsystem Digital	SUT	System Under Test
IP	Internet Protocol	T1	Digital Transmission Link Level 1 (1.544 Mbps)

Figure 2-2. SUT Test Configuration

9. SYSTEM CONFIGURATIONS. Table 2-2 provides the system configurations, hardware and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DSN switches noted in Table 2-2. The DSN switches listed in Table 2-2 only depict the tested configuration. Table 2-2 is not intended to identify the only switch software releases that are certified with the SUT. The SUT is certified specifically with Cisco Unified Communications Manager switching systems listed on the UC APL.

Table 2-2. Tested System Configurations

System Name	Software Release	
Avaya S8720	Communication Manager (CM) 4.0 (R014x.00.2.731.7: Super Patch 14419)	
Siemens EWSD	19d with Patch Set 46	
Avaya CS2100	Succession Enterprise (SE) 09.1	
Alcatel-Lucent 5ESS	5E16.2 Broadcast Warning Message (BWM) 09-0002	
Avaya CS1000M	5.0	
Cisco CUCM[1]	8.0(2) with Internetworking Operating System (IOS) 15.1(1)T	
Required Ancillary Equipment (Site-provided)	Active Directory	
	Public Key Infrastructure	
Cisco 2801, 2851, 2901, 2951, 3845 and 3945 Gateways (Site-provided)	IOS Version 15.1(1)T	
SUT	**Hardware**	**Software/Firmware**
Cisco Unity Connection with Software Release 8.0(2)	Unified Computing System C210-M1[2]	Cisco Unity Connection 8.0(2)
		Red Hat Enterprise AS Rel. 4. Kernel 2.6 2.6.9-89.elsmp
		IBM Informix Dynamic Server v10.00.UC9X4
		Apache Tomcat 6.0.29
		Open SSL V.9.7a
		Java 1.6.0_22-b04
		Real-Time Monitoring Tool 8.5
		ESXi 4.0.0 Build 208167
	Management Workstation (Site-provided) STIG-compliant, Common Access Card (CAC)-enabled May be on either an XP or Vista platform	Windows XP SP3 or Windows Vista SP2
	Client Workstation (Site-provided) May be on either an XP or Vista platform	Windows XP SP3 or Windows Vista SP2
		MS Outlook 2010
		View Mail 8.5.3.186
Telephones Types Tested with the SUT	**Hardware**	**Software/Firmware**
Cisco IP Phones[3]	CP7940G	Ver: 8.0(2)(4.0) App: P00308010200 Boot Load: CP-7940G PC0303010200
	CP7970G	SCCP9.0.2SR1 Boot Load: 7970-64054100.BIN
	CP7971G GE	SCCP9.0.2SR1 Boot Load: 7970-020706.BIN
Analog	Panasonic KX-TS15-W	Not Applicable
	Panasonic KX-T2355	Not Applicable
ISDN BRI	Siemens Optiset ISDN BRI	Not Applicable
	Avaya M5317T	5.0 1999
Digital	M3902	N/A

Table 2-2. Tested System Configurations (continued)

NOTES:
1 The SUT was tested with the Cisco Unified Communications Manager Release 8.0(2).2. JITC analysis determined the SUT is also certified for joint use with the other versions of the Cisco Unified Communications Manager and Cisco Call Manager switching systems listed on the Unified Capabilities (UC) Approved Product List (APL).
2 The SUT is certified with all Cisco-supported hardware for Unity Connection 8.0(2), including MCS and UCS servers listed with the Cisco Unified Communications Manager switching systems listed on the APL.
3 These were the IP phones and their respective firmware were tested with the SUT however, the SUT is also certified with all Cisco IP instruments included in their respective Cisco Unified Communications Manager switching systems listed on the UC APL.

LEGEND:

5ESS	Class 5 Electronic Switching System	ISDN	Integrated Services Digital Network
APL	Approved Products List	JITC	Joint Interoperability Test Command
App	Application	SCCP	Skinny Call Control Protocol
APS	Asynchronous Packet Switching	SG	Single Group
BRI	Basic Rate Interface	SP	Service Pack
CP	Cisco Phone	SR	Service Release
CS	Communication Server	SUT	System Under Test
DSN	Defense Switched Network	UC	Unified Capabilities
EWSD	Elektronisches Wählsystem Digital	ver	Version
IP	Internet Protocol		

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion

(1) Voice mail interaction with Multi-Level Precedence and Preemption (MLPP). The UCR 2008 Change 1, section 5 states that CPE must meet MLPP requirements. The SUT was tested in accordance with the UCR, section 5.2, which states that precedence levels above ROUTINE shall not be forwarded to voice mail. Intra-switch and inter-switch calls were placed over the network test configuration to subscribers configured on the Cisco Unity Connection and assigned voice mail at different precedence levels with the following results. MLPP interaction with voice mail was successfully tested with the following Internet Protocol (IP) instruments: CP-7940G, CP-7970G and CP-7971G-GE. These were the IP phones tested with the SUT; however, the SUT is also certified with all Cisco IP instruments included in their respective Cisco Unified Communications Manager switching systems listed on the UC APL. Intra-switch and inter-switch calls were placed over the network test configuration to subscribers on the Cisco Private Branch Exchange class marked with voice mail at different precedence levels with the following results:

(a) All ROUTINE calls placed to a voice mail subscriber that was busy or did not answer, were properly routed to voice mail as required by the UCR, section 5.

(b) All calls above ROUTINE placed to a voice mail subscriber that was busy or did not answer were not routed to voice mail, but instead were diverted to an alternate directory number if not answered before the precedence call diversion timer expired, as required by UCR, section 5.

(2) Differentiated Services Code Point (DSCP). The UCR 2008, Change 2, paragraph 5.3.3.3.2, states that the product shall support the plain text DSCP plan, as shown in Table 5.3.3-1, DSCP Assignments, and the DSCP assignment shall be software configurable for the full range (0-63) to support Deployable deployments that may use a different DSCP plan.

(a) DSCP Tagging. Captures were taken between the SUT and the Cisco Unified Communications Manager (CUCM). Voice media was sent as International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) G.711 packets. All ITU-T G.711 packets were 20 milliseconds in size and were correctly tagged with a DSCP value of 46 and can be configured by the SUT to assign any value, 0 to 63. Voice signaling packets from the CUCM were properly tagged with a DSCP value of 40, however the voice signaling packets from the Unity Connection server were tagged with a DSCP value of 24. The DSCP value on the Unity Connection server is not configurable. DISA has adjudicated this discrepancy as having a minor operational impact.

(b) Tagging between the SUT and the MS Windows XP Pro and MS Windows Vista Personal Computer (PC) MS Outlook 2010 Client (e-mail). The SUT provides the ability to convert a voicemail message recorded by a user in the SUT to Internet Message Access Protocol (IMAP) IP packets transmitted to a PC client in the form of WAV file in an email. Cisco ViewMail for Outlook (VMO) add-in client software allows the PC user to send, listen to, and manage messages directly from their Outlook Inbox. This functionality was tested and the IMAP packets transmitted by the SUT to the PC client were correctly tagged with a DSCP value of 0. The Management Workstation has the ability to tag any value 0-63 and correctly tagged DSCP at 16 for operational network management traffic.

b. Test Summary. The SUT meets the critical interoperability requirements for a Customer Premise Equipment voice mail system in accordance with the Reference (c). The SUT was tested with the Cisco Unified Communication Manager Release 8.0(2). Additionally, JITC analysis determine the SUT is also certified for joint use with the other versions of the Cisco Unified Communications Manager and Cisco Call Manager switching systems listed on the Unified Capabilities (UC) Approved Product List (APL). The SUT offers facsimile (fax) and e-mail capabilities; however, these capabilities were not tested and are not covered under this certification. No other configurations, features, or functions, except those cited within this report, are certified by the JITC.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents

and references are on the JITC Joint Interoperability Tool (JIT) at http://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/tssi. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.